

Popov, V.M.

✓ 5134. COMBUSTION OF RASHKIR (BROWN) COAL IN A FURNACE WITH MILLERIZER
AND SHAFT CLASSIFIER. Popov, V.M. (Energoftiz (Int. Eng., Moscow), Fou.
FU 1956, 4-7). Experiments with a boiler rated at 25 tons steam/h were
recorded. When coal was taken from the top of the heap in summer it was dry
enough (4.6% moisture) to get over handling difficulties and the boiler was run
at up to 20 tons steam/h. A temperature of 400°C is recommended for the dry-
ing agent (air and/or flue gases) to be used with this fuel. (L).

104-3-3/45

AUTHOR: Popov, V.M., Candidate of Technical Sciences.

TITLE: The qualitative characteristic of Bashkirian coal and special features of mastering its use in power stations.
(Kachestvennaya kharakteristika bashkirskogo ugliya i osobennosti osvoyeniya ego na elektrostantsiyakh.)

PERIODICAL: "Elektricheskiye Stantsii" (Power Stations), 1957,
Vol. 28, No.3, pp. 8 - 11 (U.S.S.R.)

ABSTRACT: The production of brown coal of high moisture content which is very difficult to burn in existing furnaces is now being rapidly extended. These fuels include Bashkirian and Ukrainian brown coals, which are worked by the open cast method so that their water content depends on meteorological conditions and other factors.

The main characteristics of Bashkirian coal such as the calorific value, ash and moisture content are tabulated for different periods of time and different coalfields. The water content varies between 42 and 60% and the ash from 10 to 30% on the dry weight. The calorific value varies between 1 900 and 2 500 kcal/kg. Although the volatiles content is up to 65% the coal is not subject to spontaneous combustion in coal stores. Bashkirian coal is very hygroscopic and the fine fractions hold the most water. When the water content is high

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The qualitative characteristic of Bashkirian coal and special features of mastering its use in power stations. (Cont.)

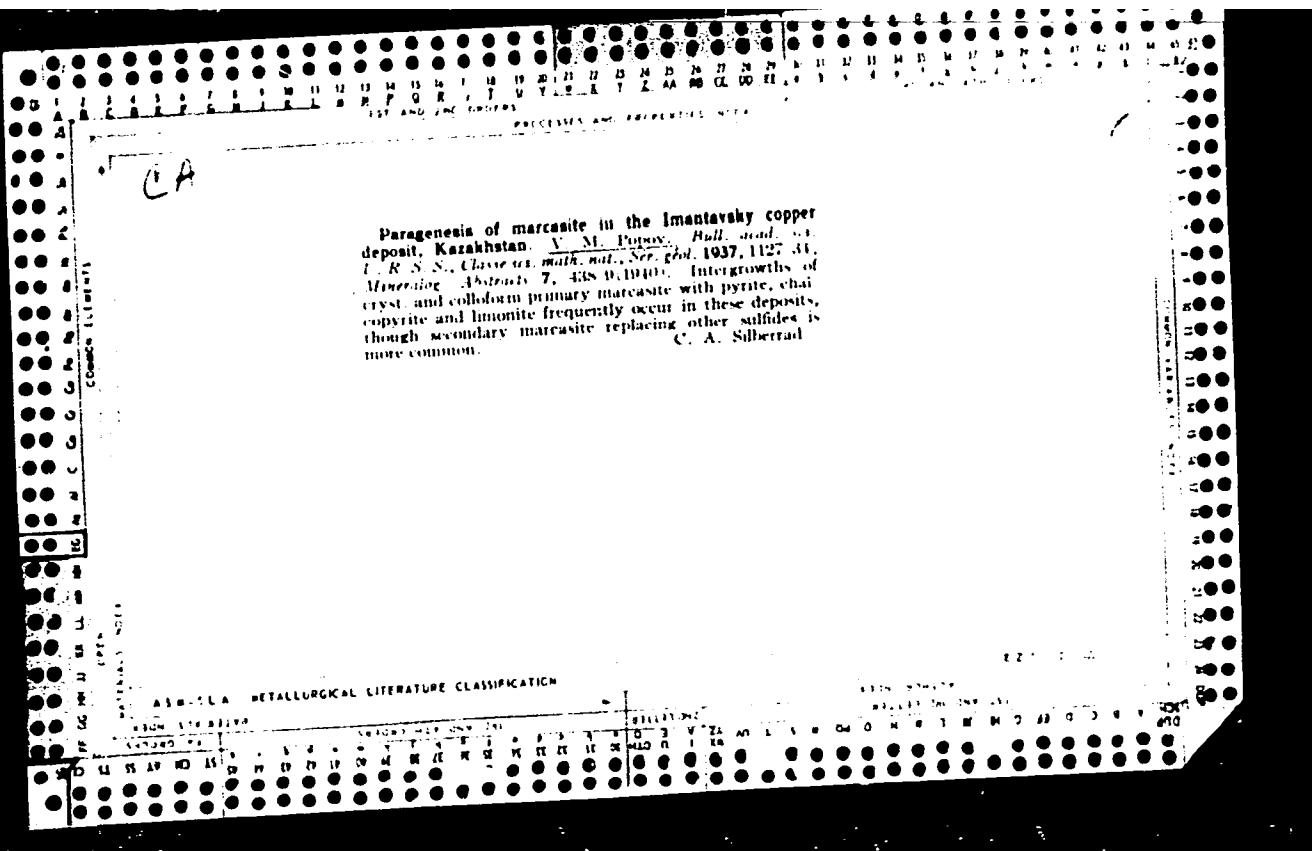
(59 - 50%) or when the coal is frozen it becomes almost impossible to pour it so that transport of the fuel within the power station is very difficult. Data is given on the apparent density and milling properties of the coal and also data on the inflammability of the coal dust. Data are given on the utilisation of Bashkirian coal in power stations.

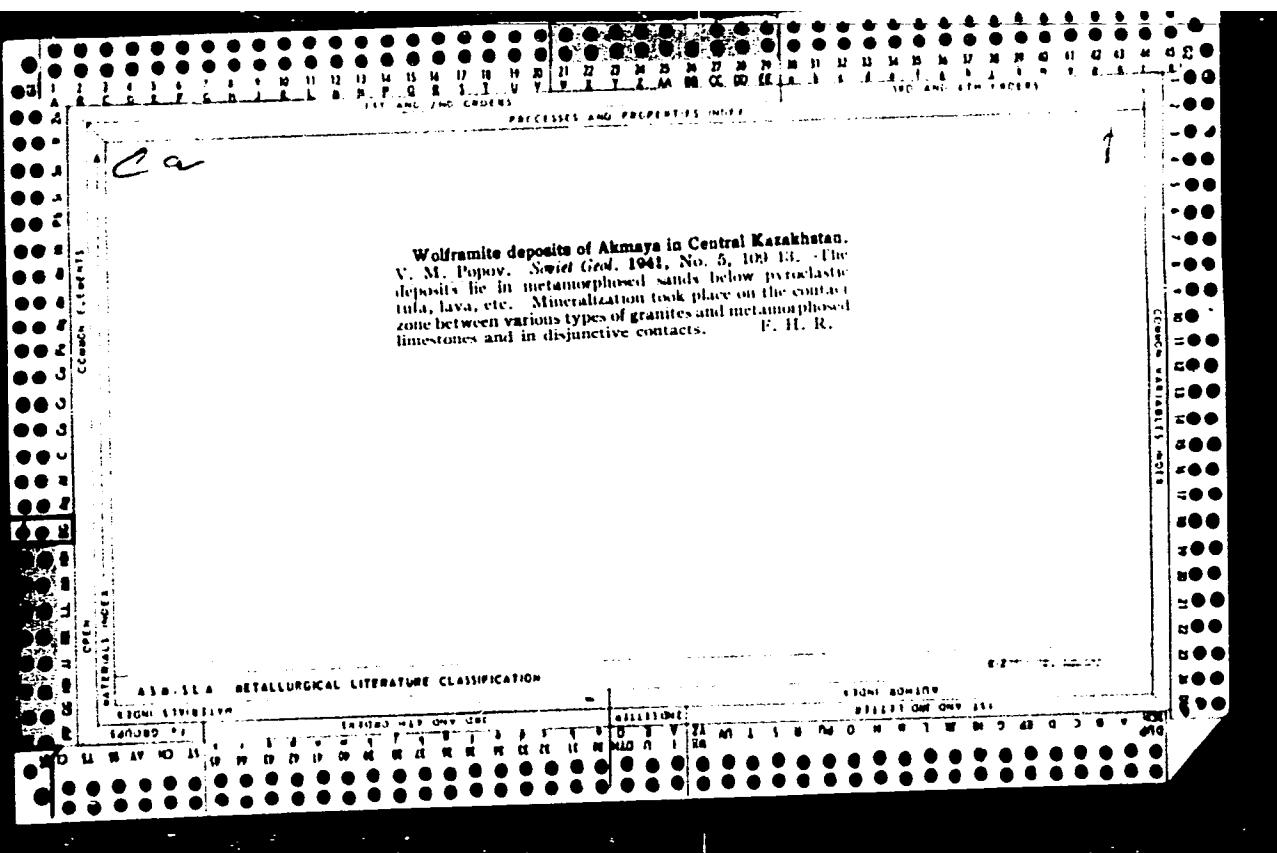
It is concluded that for the normal operation of power stations preliminary drying of the coal is necessary in order to avoid major difficulties in unloading and transporting it. The maximum moisture of the dried coal should not be greater than 40% in winter (to avoid freezing) or 64% in summer to avoid sticking and clogging of the coal. In order to minimise the influence of meteorological conditions in transporting the coal to the consumer it is necessary to reduce as far as possible the transit time of trains and to take measures against freezing of the fuel when loading the wagons such as oiling the sides and floors of the wagons or scattering sawdust or chaff. In order to accelerate the unloading of the coal from wagons at large power stations with a fuel consumption of 350 t/h and more it is advisable to use wagon tipplers in the unloading equipment. The coal should be put into store during

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POPOV, Viktor Mikhaylovich.; SHABAROV, Aleksandr Mikhaylovich.; GARTUNG,
S.V., red.; VORONIN, K.P., tekhn. red.

[Burning peat in boiler furnaces] Szhiganie torfa v topkakh kotlov.
Moskva, Gos. energ. izd-vo, 1958. 86 p. (MIRA 11:12
(Peat)
(Boilers)





POPOV, V. M.

Popov, V. M. "Copper sandstone of Kazakhstan," Trudy Novocherkas. politekhn. in-ta im. Ordzhonikidze, Vol. XVII, 1948, p. 53-60.

SO: U-3264, 10 April 1953, (Letopis 'Zhurnal 'nykh Statey, no. 3, 1949)

OBUT, A.M.; MARKOVSKIY, B.P., redaktor; POPOV, V.M., otvetstvennyy redaktor

[Field atlas of leading graptolites of the Upper Silurian in the
Kirghiz S.S.R.] Polevoy atlas rukovodashchikh graptolitov
verkhnego silura Kirgizskoi SSR. Pod red. B.P. Markovskogo. Frunze,
Izd-vo Kirgizskogo filiala Akademii nauk SSSR, 1949. 56 p.
(Kirghizistan--Graptolites) (MLRA 9:10)

ea

Genesis of deposits of copper-bearing sandstones of hydro-
thermal type. V. M. Popov. *Izvest. Akad. Nauk U.S.S.R.,*
Ser. Geol. No. 5, 1-17(1951).—P. divides the Cu-bearing
sandstones into several genetic groups based on the results of
transformation of the original sedimentary-synthetic type
of Cu mineralizations. The groups are: (1) sedimentary-
synthetic; (2) metamorphization in different stages; (3)
veiny, lateral-secretion; (4) contact-metamorphized sedi-
mentary-synthetic, changed under the influence of later
intrusions; and (5) infiltration, formation as a result of
migration of Cu in sedimentary rocks, and repeated dep-
osition of it under conditions of favorable structure and
Gladys S. Macv

SURGAY, V.T.; POPOV, V.M., otvetstvennyy redaktor

[The history of mining in Kirghizistan] K istorii gornogo promysla
v Kirgizii. Frunze, Izd-vo Kirgizskogo filiala Akademii nauk SSSR,
1951. 23 p.

(MIRA 9:9)

(Kirghizistan--Mineral industries--History)

POPOV, V.M.; BELYANKIN, D.S., akademik.

On the internally formed conglomerates of Dzhezkazgan and characteristics of mineralization in them. Dokl.AN SSSR 91 no.4:927-930 Ag '53.
(MLRA 6:8)

1. Akademiya nauk SSSR (for Belyankin). 2. Institut geologii Kirgizskogo filiala Akademii nauk SSSR (for Popov).
(Dzhezkazgan--Petrology) (Petrology--Dzhezkazgan)

Popov V.M.
VAZHRSHEV, V.A.; POPOV, V.M.

Phenomena of diagenesis and epigenesis in lower Cretaceous Red Beds of southern Kirghizia. Trudy Inst.geol.Kirfan SSSR no.5:21-28 '54. (MLRA 9:12)

(Kirghizistan--Geology, Stratigraphic)

POPOV, V.M.

Facies and paragenetic association of copper-bearing Red Beds with
gypsum- and salt-bearing deposits. Trudy Inst.geol.AN Kir.SSR
no.6:81-97 '55. (MLRA 10:2)
(Geology, Stratigraphic) (Copper ores)

POPOV, V.M.

Some specific geological characteristics of copper-bearing sand-
stones of central Kazakhstan. Trudy Inst.geol.AN Kir.SSR no.6:
233-246 '55. (MIRA 10:2)

(Kazakhstan--Copper ores)

POPOV, V.M.

Genesis of copper-bearing sandstones found in Northern Kirghizia and
Central Kazakhstan. Izv.AN Kir.SSR no.2:23-43 '56. (MIRA 9:9)
(Kirghizistan--Copper ores) (Kazakhstan--Copper ores)

POPOV, V.M.

Practical utilization of studies on copper sandstones of
central Kazakhstan and northern Kirghizia. Izv.AN Kir.SSR
no.6:23-37 '58. (MIRA 11:12)
(Kazakhstan--Sandstone) (Kirghizistan--Sandstone)

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SOV/11-59-6-3/15

AUTHOR: Popov, V.M.

TITLE: Diagenetic Disturbances of Bedding and Stratification in Ore-Bearing Rocks of the Dzhezkazgan Suite

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geologicheskaya, 1959, Nr 6, pp 34-51 (USSR)

ABSTRACT: The formation of sedimentary deposits of the Dzhezkazgan suite occurred in conditions of a shallow maritime epicontinental basin submitted to the rhythmic oscillatory movements during the general elevation of the region. The suite is composed of multicolored beds clearly indicating its rhythmical structure, with interlying sedimentary ruptural and slide breccias and internally formed conglomerates. These conglomerates indicate short erosion periods with ensuing resedimentary processes. They are usually situated at the base of each sedimentary rhythmic cycle formed of two series of layers, one - of grey sandstones and the other of red aleurolites and argillites - with

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Diagenetic Disturbances of Bedding and Stratification in Ore-Bearing Rocks of the Dzhezkazgan Suite

layers of intermediate color between them. The series of gray layers with conglomerates in their formation corresponds to the transgressive part, and the red ones - to the regressive part of the rhythmic cycle. Moreover, ores are accumulated exclusively in layers of gray or intermediate color; as a rule the red layers do not contain any ore. The thickness of such a rhythmic cycle varies from 20 to 70 m. The totality of 18 such cycles forms the Dzhezkazgan suite, about 650 m thick. All the ore-minerals (copper sulfides) fill the thin layers in ore-bearing beds strictly following the original structure, and, being of a darker color, stress even more the stratified structure of enclosing rocks. It also can be seen in the reddish argillite and aleurolite containing rocks that all concentrations of copper sulfides are surrounded by a greenish-gray discoloration aureole. According to the author, the occurrence of these aureoles is connected with the physico-chemical conditions of the pre-

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cipitation of sulfides and cannot be ascribed to the hydro-thermal metamorphosis. Copper sulfides were formed under conditions of a regenerating environment, and the ferric oxides, which cause the reddish color of those layers, change into ferrous oxides because of those regenerating conditions. That, in turn, causes the change of reddish color of enclosing rocks into greenish-gray color. Thus the formation of sulfides is accompanied by the reduction of Fe^{+++} into Fe^{++} . Diagenetic disturbances widely described and illustrated (Figures 2 to 8) by the author occurred after the formation of ores; ore minerals and ore-bearing layers took part in these disturbances together with the enclosing rocks. The same can be said of ruptural and slide breccias; all minerals and rocks from which these breccias were formed were taken from the enclosing rocks or ores. The occurrence of "Alpine type" veins in these breccias is connected with the later stage of transformation of primarily

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Diagenetic Disturbances of Bedding and Stratification in Ore-Bearing Rocks of the Dzhezkazgan Suite

sedimentary diagenetic ores, connected with the epigenesis, dislocating metamorphism and the early stages of a general regional metamorphism. Concretionary formations of different type and composition (Figures 12 to 15) found sometimes in ore-bearing rocks, i.e. are copper or iron sulfides or are composed of sulfides only. The presence of these sulfides, and especially of copper sulfides, indicates that the primary sedimentation material included the copper which took part in all subsequent diagenetic transformations. The author thus refutes the assertions of T.A. Sutpayeva who tries to prove hydro-thermal occurrence of the Dzhezkazgan deposit. The following names are mentioned by the author: L.F. Narkeljyn, L.I. Ivankov and G.D. Kladentsev. There are 15 photo-

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Diagenetic Disturbances of Bedding and Stratification in Oil-bearing Rocks of the Dzhezkazgan Suite

graphs and 7 Soviet references.

ASSOCIATION: Institut geologii AN KirgSSR (The Institute of Geology of the AS KirghizSSR), Frunze

SUBMITTED: November 2, 1957

Card 5/5

POPOV, V.M.

Geological regularities in the distribution of cupreous sandstones
in central Kazakhstan and the northern Tien Shan. Zakonom. razm.
polezn. iskop. 2:183-208 '59. (MIRA 15:4)

1. Institut geologii AN Kirgizskoy SSR.
(Kazakhstan--Copper ores) (Tien Shan--Copper ores)

POPOV, V.M.

Favorable and screen horizons in sheet deposits of nonferrous metals.
Zakonom. razm. plezn. iskop. 5:353-384 '62. (MIRA 15:12)

1. Institut geologii AN Kirgizskoy SSR.
(Ore deposits)

POPOV, V.M.; BAYBULATOV, E.B.

Cuprous sandstones in ancient formations of the Talas Ala-Tau.

Izv. AN Kir. SSR. Ser. est. i tekhn. nauk 4 no.3:41-56 '62.

(MIRA 15:11)

(Talas Ala-Tau—Sandstone)

POPOV, V.M.; SHABALIN, V.V.; KALMURZAYEV, K.Ye.

First All-Union Conference on Deep-Sea Deposits. Izv. AN Kir.
SSR. Ser. est. i tekhn. nauk 4 no.3:141-143 '62. (MIRA 15:11)
(Deep-sea deposits)

POPCV, V.M.

Problems of Ilechekazgan and genesis in the light of new
facts. Cisl. rad. meatorezhi 5 no.6/106-116 N-L'63,
(MIRA 17:5)

BAYBULATOV, Erik Begaliyevich; POPOV, V.M., akademik, otv. red.

[Achik-Tash iron-pyrite deposit and its genesis] Achik-Tashskoe sernokolchedannoe mestorozhdenie i ego genezis. Frunze, Izd-vo AN Kirg.SSR, 1964. 190 p. (MIRA 17:5)

1. Akademiya nauk Kirgizskoy SSR (for Popov).

ADYSHEV, M.M., akademik, glav. red.; KOROLEV, V.G., zam. glav. red.; BAYEULATOV, E.B., red. BURYKIN, I.V., red.; GRIGORENKO, P.G., red.; DAVLETOV, I.D., red.; KONYUK, A.A., red.; POPOV, V.M., akademik, red.; SURGAY, V.T., red.

[Tectonics of the western regions of the northern Tien Shan] Tektonika zapadnykh raionov Severnogo Tian'-Shania. Frunze, "Ilim," 1964. 143 p. (MIRA 17:8)

1. Akademiya nauk Kirgizskoy SSR Frunze. Institut geologii.
2. Akademiya nauk Kirgizskoy SSR (for Adyshev, Popov).

KOROLEV, V.G., otv. red.; ADYSHEV, M.M., akademik, glav. red.;
BAYBULATOV, R.A., red.; BURYKHIN, I.V., shaderik, red.;
GRIGORENKO, P.G., red.; DANILETOV, I.L., red.; KONIUK, A.A.,
red.; POPOV, V.M., akademik, red.; SURGAY, V.T., red.

[Materials on the geology of ore deposits in the Tien Shan]
Materialy po geologii rudnykh mestorozhdenii Tian-Shana.
Frunze, Izd-vo "Ilim," 1964. 140 p. (MIRA 17:8)

1. Akademiya nauk Kirgizskoy SSR, Frunze. Institut geologii.
2. Akademiya nauk Kirgizskoy SSR (for Adyshev, Popov).
3. Institut geologii AN Kirgizskoy SSR (for all).

KASHIRIN, Fedor Tikhonovich; POPOV, V.M., otv. red.

[Geology of coal-bearing deposits in Kirghizia] Geologiya
ugol'nykh mestorozhdenii Severnoi Kirgizii. Frunze, Izd-vo
AN Kirgizskoi SSR, 1964. 108 p. (MIRA 17:5)

VASIL'YEV, M.V., doktor tekhn. nauk; POPOV, V.M., inzh.

Structural parameters of loading and unloading trestles
in open pit mines with railroad and automobile transportation.
Shakht. stroi. 9 no. 12:5-9 D '65. (MIRA 18:12)

1. Institut gornogo dela, Sverdlovsk.

POPOV, Valentin Mikhaylovich; DOKUNINA, Ye.V., redaktor; MIKHAYLOVA,
V.V., tekhnicheskiy redaktor.

[Automation in mine drainage] Avtomatizatsiya rudnichnogo
vodoootliva. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi
i tsvetnoi metallurgii, 1955. 319 p. (MLRA 9:1)
(Pumping machinery)

POPOV, V.M.

Apparatuses for the automatic control of mining equipment
performance. Gor. zhur. no. 9:49-53 S '55. (MLRA 8:8)
(Automatic control) (Mine machinery)

Po PoV , V. M.

ANDREYEV,S.Ye.; BOKIY,B.V.; GORODETSKIY,P.I.; GREYVER,N.S.; SHCHUKIN,A.A.
GERONT'YEV,V.I.; SKOCHINSKIY,A.A.; TERPIGOROV,A.M.; SHEVYAKOV,L.D.;
SPIVAKOVSKIY,A.A.; VERKHOVSKIY,I.M.; VORONKOV,I.M.; YELANCHIK,G.M.;
KASHIN,N.V.; SLOBODEN,M.I.; GUZENKOV,P.G.; ZEMSKOV,V.D.; NOVIKOV,F.S.
OSETSKIY,V.M.; SOSUNOV,G.I.; YASYUKEVICH,S.M.; KHAN,G.A.; POPOV,V.M.

In memory of Professor Levenson. Gor.zhur. no.9:60 S '55.
(MIRA 8:8)

(Levenson, Lev Borisovich, 1878-1955)

Popov, V M

AUTHOR: Popov, V.M. 127-58-5-12/30

TITLE: Experience in Operating Automatic Water Pumping Installations
in the Ore Mining Industry (Opyt ekspluatatsii avtomati-
cheskikh vodoootlivnykh ustavovok v gornorudnoy promy-
shlennosti)

PERIODICAL: Gornyy Zhurnal, 1958, Nr 5, pp 37-45 (USSR)

ABSTRACT: With the lowering of the mining operation to deeper levels,
the problem of equipment for automatic water-pumping in-
stallations arises. Single-stage and two-stage pumping
systems turn out to be most efficient, and the latter is
most suitable for deep mines. Automatic pumping instal-
lations were put into operation in a number of mines.
This work was performed with the participation of special-
ists from the Gintsvermet and the mines (P.G. Sergeyev,
A.F. Sergeyenko, I.G. Korsakov, A.M. Poduyev, B.L. Yemel'-
yanov, P.N. Sadovskiy, A.F. Gavrilenko, A.M. Ustinenko,
V.S. Sulin, A.Ye. Vlasov, V.A. Kravchenko, and K.S. Par-
shenkova) under the supervision of the author. Automatic
pumping installations with low- and high-voltage motors
manufactured by the Nal'chikskiy elektromekhanicheskiy
zavod (Nal'chik Electromechanic Plant) were introduced

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Experience in Operating Automatic Water Pumping Installations in the Ore Mining Industry

into some copper, tungsten and nickel mines, and are at present being installed in several mines of non-ferrous and ferrous metallurgy. The technico-economical indices of their operation, during the last 4 years, are shown in Table 2. Experience has shown that reliability of water pumping increased with the application of automation. The labor force was cut from 60 to 70%, and electric power consumption was also decreased. Investigation of various materials for manufacturing automatic control equipment has showed that steels of the Kh18 and 30Kh grades are most resistant to corrosion and erosion. Of non-metallic materials, the best corrosion- and erosion-resistant properties are possessed by "vinyl plastics" (viniplast). Remote control systems for automatic pumping installations are not expedient for deeper levels, because of the high consumption of control cables. Telemechanic systems with contactless indicators have a brighter prospect for application.

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Experience in Operating Automatic Water Pumping Installations in the Ore Mining Industry

There are 5 figures, 2 circuits, 2 tables and 3 Soviet references.

ASSOCIATION: Gintsvetmet

AVAILABLE: Library of Congress

Card 3/3 1. Mines-Operation 2. Water pumps-Application

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SOV/127-59-3-10/22

AUTHOR: Popov, V.M., Candidate of Technical Sciences and
Ilyakhinskiy, A.S., Engineers

TITLE: Industrial Tests: of Contact Telemechanical Systems
(Promyshlennyye ispytaniya kontaktnykh telemek-
hanicheskikh sistem)

PERIODICAL: Gornyy zhurnal, 1959, Nr 3, pp 36-41 (USSR)

ABSTRACT: The authors describe various methods and devices for the substitution of remote control by telecontrol, when the distance of the controlled automated installations from the central control desk is more than 200 m. The telecontrol is achieved by sending coded signs for either time or amplitude. Time signs consist in sending along the line of current impulses of different duration or with different intervals between the impulses. On the sending (controlling) side, a device is installed which acts on the duration of the impulse or the interval, and on the receiving side - a device which reacts to the duration

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Industrial Tests of Contact Telemechanical Systems.

of either impulse or interval. The main telemechanical installation VRT-53, works on this principle. Amplitude signs are characterized by sending along the line of current impulses of various importance. This principle was adapted in the telecontrolling installations TRT developed by the Moskovskoye proyektno-eksperimental'noye otdeleniye instituta Tyazhpromelektronprojekt (the Moscow Planning Experimental Section of Tyazhpromelektroprojekt Institute) and tested in mines of the Krasnoural'sk Mine Management. Telemetric installations for measuring the voltage of alternate current, the water pressure in the delivery conduits of water pump stations, and the water level in reservoirs, were also tested. The device for telemetry of a.c. (figures 1 and 2) is equipped with a copper-oxide rectifier, and its secondary transformer has a permalloy core instead of transformer steel. Owing to the high coefficient of magnetic penetrability of the permalloy, the primary winding of the

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Industrial Tests of Contact Telemechanical Systems.

transformer consists of only three turns. This core protects the device from accidents when the measured current accidentally increases. Tests showed that measuring errors were only 2% - 2,5%. The device for telemetry of water pressure in delivery conduits (figures 3-4) consists of a reochord mechanically linked with a manometer, and connected with terminals of secondary winding of a step-down transformer. The measuring is based on the principle of transformation of mechanical values into electrical ones. The telemechanical device for measuring the water level in reservoirs (figure 5) utilizes an SU indicator in which the moves of the buoy cause the mercury multi-way switch to turn and to contact one of three circuits linked with the contact of the relay selector. The signal reaches the control desk where one of the sign-relays switches on a green, yellow or red bulb, depending on the actual water level. All the above devices are being very slowly introduced due to the

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Industrial **Tests** of Contact Telemechanical Systems.

shortage of equipment adaptable to specific under-ground conditions. The following names were men-tioned by the authors in connection with the develop-ment of this equipment. Engineers L.G. Rashkovskiy, V.A. Alekseyev, A.M. Gnesin and M.R. Neyfel'd, and Technician V.I. Chezganov. There are 2 photos, 3 dia-grams and 1 table.

ASSOCIATION: ~~Gintsvetmet~~, Tyazhpromelektroprojekt, Moscow.

Card 4/4

SOKOLOV, N.S. (Magadanskaya oblast'); POPOV, V.M. (Magadanskaya oblast'); DYMOM, K.M. (Magadanskaya oblast'); SHUVALOV, L.V. (Magadanskaya oblast'); MATSUYEV, L.P.; BONDARENKO, I.G. (Magadanskaya oblast'); MAYO-ZNAK, Ye.S. (Magadanskaya oblast'); DZASOKHOV, Kh.B. (Magadanskaya oblast')

Eliminate inefficiency in the operation of dredges. Kolyma 21
no.1:4-7 Ja '59. (MIRA 12:6)

1.Nachal'nik gornogo upravleniya (for Sokolov). 2.Nachal'nik dragi No.175 (for Popov). 3.Nachal'nik dragi No. 173 (for Dymov). 4.Nachal'nik priiska im. Gastello (for Shuvalov). 5.Zamestitel' direktora Vsesoyuznogo nauchno-issledovatel'skogo instituta zolota i redkih metallov, Magadan (for Matsuyev). 6.Nachal'nik otdela truda i zarabotnoy platy gornogo upravleniya (for Bondarenko). 7.Zamestitel' nachal'nika proizvodstvenno-tehnicheskogo otdela sovnarkhoza (for Mayo-Znak).
8.Nachal'nik priiska im. Chkalova (for Dzasokhov).
(Dredging machinery) (Hydraulic mining)

POPOV, Valentin Mikhaylovich; SHOROKHOVA, A.V., red.izd-va; SABITOV, A.,
tekhn.red.

[Introduction of automatic control of mine drainage] Avtomati-
zatsiia rudnichnogo vodootliva. Izd.2., dop. i perer. Moskva.
Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 362 p.
(MIRA 14:2)

(Mine drainage) (Automatic control)

POPOV, Viktor Mikhaylovich; DAVYDOVA, Iraida Vasil'yevna; VLADIMIROV, N.M.,
red.; VORONIN, K.P., tekhn. red.

[Burning of lignite with a high moisture content in the furnaces of
steam boilers] Szhiganie vysokovlazhnykh burykh uglei v topkakh
parovykh kotlov. Moskva, Gos. energ. izd-vo, 1960. 143 p.
(MIRA 14:9)

(Lignite)

(Furnaces)

VASIL'YEV, M.V.; SUBBOTIN, A.N.; POPOV, V.M.

Study of the speed characteristics of large-capacity self-dumping
trucks in deep pits. Trudy Gor.-geol. inst. UFAN SSSR no.55:
25-34 '60. (MIRA 15:6)

(Mine haulage)

VASIL'YEV, M.V.; POPOV, V.M.

Study of the daily schedule of operation of large-capacity self-dumping trucks in pits. Trudy Gor.-geol. inst. UFAN SSSR no.55: 45-50 '60. (MIRA 15:6)

(Mine haulage)

VASIL'YEV, M.V.; POPOV, V.M.; SUBBOTIN, A.N.

Determining the practical width of strip mine roads. Trudy Gor.-
geol. inst. UFAN SSSR no.55:61-70 '60. (MIRA 15:6)
(Mine haulage)

PREDVODITELEV, A.S.; LAVROV, N.V., doktor tekhn. nauk, prof.; AL'T-SHULER, V.S., doktor tekhn. nauk; POPOV, V.M., kand. tekhn. nauk; TSEYTIN, B.S., red. izd-va; PRUSAKOVA, T.A., tekhn. red.; RYLINA, Yu.V., tekhn. red.

[Fuel gases in the national economy; work of the All-Union Conference] Ispol'zovanie goriuchikh gazov v narodnom khoziaistve; trudy Vsesoiuznogo soveshchaniia. Moskva, 1961. 266 p. (MIRZ 14:5)

1. Akademiya nauk SSSR. Institut goriuchikh iskopayemykh.
2. Chlen-korrespondent AN SSSR (for Predvoditelev) 3. Institut goryuchikh iskopayemykh AN SSSR (for Levrov, Popov)
(Gas as fuel--Congresses)

POPOV, V.M., kand.tekhn.nauk; OLEINIK, L.V., kand.ekonom.nauk

New method for obtaining industrial gases. Vest. Akad.SSR 31
no. 2:114-117 F '61. (ИМН 14:2)
(Gas manufacture and works)

SHUBNIKOV, Aleksey Kuz'mich, doktor tekhn. nauk; ISTOMIN, Lev Ivanovich, inzh.; SOLOV'YEV, Nikolay Aleksandrovich, kand. tekhn. nauk; POPOV, Viktor Mikhaylovich, kand.tekhn. nauk; SRIENYY, V.M., retsenzent; SAMUSEV, V.P., red. izd-va; SHAFETA, S.M., tekhn.red.

[Planning and linear programming of coal supplying] Planirovanie i lineinoe programmirovaniye uglesnabzheniya. Pod obshchei red. A.K. Shubnikova. Kiev, Gostekhizdat USSR, 1962. 364 p. (MIRA 16:2)
(Coal)

LAVROV, Nikolay Vladimirovich; SHURGIN, Aleksey Petrovich; POPOV, V.M., kand. tekhn. nauk, otv. red.; SAVINA, Z.A., red. izd-va; SIMKINA, G.S., tekhn. red.

[Introduction to the theory of combustion and fuel gasification]
Vvedenie v teoriu goreniia i gazifikatsii topliva. Moscow, Izd-vo Akad. nauk SSSR, 1962. 214 p. (MIRA 15:9)
(Combustion)

VASIL'YEV, M. V., kand. tekhn. nauk; POPOV, V. M., inzh.;
ALENICHÉV, V. M., inzh.

Development of the open method of mining manganese ores in the
Northern Urals. Izv. vys. ucheb. zav.; gor. zhur. 5 no. 8:12-17
'62. (MIRA 15:10)

1. Institut gornogo dela Ural'skogo filiala AN SSSR. Rekomende-
vana kafedroy otkrytykh gornykh rabot Sverdlovskogo gornogo
instituta imeni Vakhrusheva.

(Ural Mountains--Strip mining)

POPOV, V.M., kand.tekhn.nauk

Seminar on automation of the production processes in mines.
Gor.zhur. no.1:78 Ja '63. (MIRA 16:1)

I. Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh
metallov.

(Mining engineering) (Automation)

POPOV, V.M., doktor tekhn. nauk

Systems of distance-type and remote control of the operation
of mine apparatus. Gor. zhur. no.10:46-50 O '63.

(MIRA 16:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut
tsvetnykh metallov, Moskva.

MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk;
POPOV, V.M., inzh.; FEDIN, I.A., inzh.

Machines for jet piercing with a ring system of cooling.
Gor. zhur. no.5345-46 My '64. (MIRA 1786)

POPOV, V.M., prof., doktor tekhn. nauk; RODIN, A.N., inzh.; BATANOGOV, A.P., inzh.; ETINGOV, S.I., inzh.

Performance of automatic fans and heating equipment at Northern Ural bauxite mines. Gor. zhur. no.4:48-52 Ap '65. (MIRA 18:5)

1. Vsesovuznyy zacchnyy politekhnicheskiy institut, Moskva (for Popov, Rodin, Batanogov). 2. Severoural'skiye boksitovyye rudniki (for Etingov).

MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk; POPOV,
V.M., inzh.; FEDIN, I.A., inzh.; BURLO, Ye.A., inzh.

Cast iron cutting without flux. Lit. proizv. no.9:22-23 S '65.
(MIRA 18:10)

POPOV, V.M.

Determining the lifting power of floating docks for seagoing vessels. Sudostroenie no. 11:65-68 N '65 (MIRA 19:1)

MOSKALEV, A.N., kand. tekhn. nauk; FILATOV, N.V., kand. tekhn. nauk;
FEDIN, I.A., inzh.; POPOV, V.M., inzh.; BURLO, Ye.A., inzh.

Tests in cutting high-alloyed steels without flux. Svar.
(MIRA 18:9)
proizv. no.9:26-27 S '65.

1. Dnepropetrovskiy filial im. AN UkrSSR (for Moskalev).
2. Sibirskiy metallurgicheskiy institut (for all except
Moskalev).

POPOV, V.M., inzh.

Repair of 35-110 kv. lines according to phase. Elek. sta. 36 no. 3157-59
(MTRA 18:8)
Ag '65.

Popov, Vasile - Mikhay
(Rumanian) //

AUTHORS: Popov, Vasile-Mikhay.

103-L4/10

TITLE: On a Relaxation of the Sufficient Conditions for Absolute Stability
(Ob oslablenii dostatochnykh usloviy absolyutnoy ustoychivosti).

PERIODICAL: Avtomatika i Telemekhanika, 1958, Vol. 19, № 1, pp. 3-9 (USSR)

ABSTRACT: The following problem is presented here, which is related to reference 1: "If a system is stable with an arbitrary function $f_k(\zeta) = h(\zeta)$ ($0 < h \leq 1$), will it also be stable with an arbitrary function of class (A)?" $f(\zeta)$ denotes a continuous function with a finite number of discontinuities of first kind and with the property, that $f(0) = 0$, $\zeta f'(\zeta) > 0$ (class A). The problem is solved in the special case of three equations. The solution is based on a lemma, which is proved here, and which permits to extend the domain of absolute stability with the help of the algorithm of Lur'ye in the space of parameters. The sufficient conditions for the absolute stability of an automatic control system of a servo-motor with a non-linear velocity characteristic are investigated. It is shown as a special case, that the necessary and sufficient conditions for an asymptotically absolute stability of the system (2.1):

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On a Relaxation of the Sufficient Conditions for Absolute Stability. I03-1-1/10

$$\dot{z}_\xi = \lambda_\xi z_\xi + f(\xi) \quad (\xi = 1, 2)$$

$$\dot{\zeta} = \beta_1 z_1 + \beta_2 z_2 - rf(\xi)$$

may be given as following, if it is assumed, that $a_1 > 0$, $a_2 > 0$ and if the boundary of the stability domain $b_1 = 0$ is excluded:

$$r > 0, b_1 > 0, b_2 > 0, \sqrt{b_2} < \sqrt{ra_2} + \sqrt{a_1 b_1}$$

b_1 , b_2 , a_1 and a_2 - denoting coefficients of the characteristic equation (2.3) $\lambda^3 + a_1 \lambda^2 + a_2 \lambda + h(r\lambda^2 + b_1 \lambda + b_2) = 0$ of the system (2.1) (see above), which has been linearized by the substitution of $f_x(\xi) = h\zeta$. It is established, that the lemma proved in this paper permits in the case of three differential equations to obtain the domain of the asymptotically absolute stability, which is coinciding (with the exception of a few isolated cases) with the maximum domain of asymptotically absolute stability, which may be obtained in the parameter-space.

There are 2 Slavic references.

Card 2/3

On a Relaxation of the Sufficient Conditions for Absolute Stability. 1C3-1-1/10

ASSOCIATION: Institute for Energetics Ac.Sc., Rumanian People's Republic (Institut energetiki Akademii nauk Rumyanskoy narodnoy respubliki).

SUBMITTED: August 20, 1957.

AVAILABLE: Library of Congress.

1. Servomechanisms-Stability
2. Stability-Mathematical analysis
3. Servo systems-Mathematical analysis
4. Differential equations-Applications

Card 3/3

S/194/62/000/004/028/105
D222/D309

1000
AUTHOR: Popov, V. M.

TITLE: Stability criteria for automatic systems containing elements of multiple-valued nonlinearities

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 4, 1962, abstract 4-2-79g (Probl. automat., 1960, no. 3, 143-150)

TEXT: Stability problems in automatic systems are not investigated satisfactorily. Published works touch on the general problems or on insufficiently accurate methods of analyzing the stability conditions. The present paper derives criteria for the stability of automatic systems. The investigations of systems are described briefly. A theorem formulates the sufficient and necessary conditions for hyperstability in a system. The case of multiple-valued characteristics is considered. Finally, some assumptions made earlier with respect to positive definite functions are made precise. The author concludes that the criteria obtained by a mathematical

Card 1/2

POPOV, V.M.

Technical conference on the automatization of pumping in mining
and ore dressing. Gor. zhur. no.10:76 O '60. (MIRA 13:9)
(Automatic control-Congresses)

POPOV, V.M.

The new stability criteria for the nonlinear automatic systems. (To be
contd.) Rev electrotechn energet 5 no.1:73-88 '60. (EEAI 10:4)
(Stability) (Automatic control)
(Laplace transformation) (Asymptotes)

16.8000(1103,1329,1031)

31328
S/569/61/001/000/013/019
D274/D305

AUTHOR:

Popov, V. M. (Rumania)

TITLE:

Performance criterion for nonlinear control systems

SOURCE:

International Federation of Automatic Control. 1st
Congress, Moscow, 1960. Teoriya nepreryvnykh sistem.
Spetsial'nyye matematicheskiye problemy. Moscow,
Izd-vo AN SSSR, 1961. Trudy, v. 1, 404-412

TEXT: A new performance criterion is proposed, constituting a modification of a stability criterion obtained by the author in earlier works. The main feature of the new criterion is that it is expressed by means of the transfer function of the linear part of the system. The criterion can be expressed both analytically and graphically; for convenience, only the graphical aspect of the criterion is considered. Fig. 1 represents a block diagram of the system under consideration. L is the linear element, and N—the nonlinear. The input variable x of the nonlinear element and its output variable y are connected by the nonlinear equation

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S/589/61/001/000/013/019
D274/D305

Performance criterion for...

(2.1)

$$y = \varphi(x)$$

where φ is a continuous function which satisfies

(2.2)

$$\varphi(0) = 0$$

and

$$h_1 x^2 \leq \varphi(x)x \leq h_2 x^2 . \quad (2.3)$$

In the following, it is stipulated that the nonlinear element (the function $\varphi(x)$) belongs to the class $A(h_1, h_2)$. In addition, the subclass of functions A' is considered. Let

$$W(s) = \frac{P(s)}{Q(s)} \quad (2.5)$$

be the transfer function of the linear part of the system. If the real parts of the roots of the polynomial $Q(s)$ are negative, the system under

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Performance criterion for...

consideration is called an S_0 -system. If

$$W(s) = \frac{P(s)}{sQ(s)} \quad (2.6)$$

and the additional condition

$$\lim_{s \rightarrow 0} sW(s) = \frac{P(0)}{Q(0)} > 0 \quad (2.7)$$

is satisfied, the system is called an S_1 -system. Stability criterion: This criterion is presented graphically. First, the so-called "modified phase-amplitude characteristic" (m.p.a.c.) is defined as the locus of the points x and y , where

$$x(\omega) = \operatorname{Re} W(j\omega), \quad (3.1)$$

$$y(\omega) = \omega \operatorname{Im} W(j\omega). \quad (3.2)$$

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Performance criterion for...

By definition, it also includes the point

$$x(\infty) = \lim_{\omega \rightarrow \infty} \operatorname{Re} W(j\omega), \quad (3.3)$$

$$y(\infty) = \lim_{\omega \rightarrow \infty} \omega \operatorname{Im} W(j\omega). \quad (3.4)$$

In the x,y-plane, the straight line is considered which cuts the abscissa at the point

$$x_0 = -a^2 < 0. \quad (3.5)$$

In the limit (of very small a^2) the straight line is tangent to the m.p.a.c. This corresponds to the asymptotic stability of the system. Further, it is assumed that this stability criterion is satisfied. Then, if $\varphi(x)$ is a function of class A', the system is exponentially stable. Performance criterion for S_0 -systems: As the performance measure, the

integral

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 S/569/61/001/000/013/019
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Performance criterion for...

$$I = \int_0^{\infty} y^2(t) dt \quad (5.1)$$

is taken. Let $Y(s)$ be the Laplace transform of $y(t)$, and X --of x ; $x_l(t)$ denotes the output variable of the linear element, and X_l --its Laplace transform. Between X , X_l and Y , the relation

$$X(s) = -W(s)Y(s) + X_l(s), \quad \text{Re } s > 0 \quad (5.2)$$

holds. By virtue of the stability criterion and the equation for the critical straight line,

$$\text{Re } W(j\omega) + q\omega \quad \text{Im } W(j\omega) + a_0^2 \geq 0 \quad (5.3)$$

or

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Performance criterion for...

$$\operatorname{Re} (1 - j\omega q)W(j\omega) + a_0^2 \geq 0 \quad (5.4)$$

holds. (The equation of the straight line is: $x + qy + a_0^2 = 0$.) Fulfilment of the stability criterion ensures the existence of integral (5.1), but it does not permit its evaluation. If the function φ belongs to a certain subclass of A' , this integral can be evaluated. After computations, one obtains

$$1 < - \frac{q}{a_2^2 - a_1^2} \int_0^{x(0)} \varphi(x) dx + \frac{1}{(a_2^2 - a_1^2)(a_1^2 - a_0^2)} \int_0^{\infty} z^2(t) dt \quad (5.22)$$

or

$$1 < - \frac{q}{a_2^2 - a_1^2} \int_0^{x(0)} \varphi(x) dx + \frac{1}{2\pi (a_2^2 - a_1^2)} \int_{-\infty}^{\infty} \frac{|Z(j\omega)|^2}{H(\omega)} d\omega \quad (5.19)$$

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S/569/61/001/000/013/019
D274/D305

Performance criterion for...

S_1 -systems: Let an S_1 -system satisfy the above stability criterion. A new function is introduced:

$$\varphi(x) = \varphi^*(x) + ax . \quad (6.1)$$

By a graphical method, system S_1 is transformed into system S_0 (just investigated). Conclusion: A method for evaluating integral (5.1) is proposed. The obtained performance criterion is closely linked with the graphical stability criterion which consists in the position of the m.p.a.c. with respect to a critical straight line which determines a class of non-linear functions φ , allowed from stability considerations. If the function φ belongs to a certain narrower class, the value of integral (5.1) has an upper bound which is given. This estimate does not depend on the specific character of the function φ , but is valid for any function φ which belongs to a certain class. There are 2 figures and 7 Soviet-bloc references.

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Performance criterion for...

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S/569/61/001/000/013/019
D274/D305

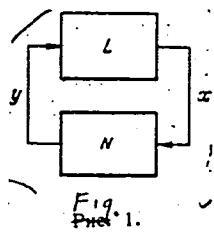


Fig. 1

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S/194/62/000/008/022/100
D201/D308

A. M. Popov

AUTHOR: Popov, Vasile M.

TITLE: Stability criteria for certain types of non-linear automatic systems

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 8, 1962, abstract 8-2-128 sh (Avtomat. și electron. 1961, 5, no. 3, 105-109 [Rum.; summaries in Rus., Ger., Fr. and Eng.])

TEXT: The author considers a system consisting of an element described by a linear differential equation with constant coefficients and of a non-linear element stability criteria (SC), expressed in terms of transfer functions of the linear element of the system; The SC determine the global stability of the system. A method of graphical representation of SC is given. A method of determining the optimum parameter from the graphical representation of stability criteria is proposed. The SC and the methods of their determination can be applied to other systems as well. [Abstracter's note: Complete translation.]

Card 1/1

43010

26.2.195

S/194/62/000/010/024/084
A154/A126AUTHOR: Popov, V.M.

TITLE: New graphical criteria for the stability of the steady state of non-linear control systems

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 10, 1962, 49, abstract 10-2-97p (Rev. électrotechn. et énerg. (RPR), 1961, v. 6, no. 1, 25 - 34; English)

TEXT: A system is given consisting of a linear element L and a non-linear element N (see Figure). Let the element N be described by the function $\eta = \varphi(\sigma)$, where $\varphi(0) = 0$. $\varphi(\sigma)$ is considered as belonging to the class Chi, h_2 if the inequality $h_1 \sigma^2 < \varphi(\sigma) \cdot \sigma < h_2 \sigma^2$ is fulfilled. A solution is given for the problem of determining the maximum positive h_0 for which the system L, N will be generally stable (ustoychiva v bol'shom), if the function $\varphi(\sigma)$ describing N belongs to the class C_0 , h_0 . A modified Mikhaylov hodograph $x = f(y)$ is introduced, where $x(\omega) = R_e G(j\omega)$; $y(\omega) = \omega I_m G(j\omega)$. Here $G(s)$ is the transfer function of the element L. A critical D_c curve is intro-

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S/194/62/000/010/024/084

A154/A126

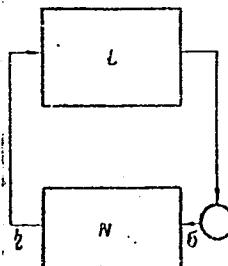
New graphical criteria for the stability of

duced, whose position on the plane x, y is determined by the following conditions:
a) D_c is not parallel to the x -axis; b) D_c divides the plane x, y in such a way that the half-plane not containing the point $(+1; 0)$, it does not contain a single point on the modified hodograph $x = f(y)$; c) from a set of straight lines satisfying conditions (a) and (b) the critical curve intercepts on the x -axis a segment of minimum length $0, x_c$ (x_c is the point of intersection of D_c and a line x equal to 0). Let $x_c = -\frac{1}{k}$, (here k is a positive number). It is proved that, if the function $\varphi(\sigma)$ belongs to the class C_0, k , then the system L, N will be generally stable. There is 1 figure.

[Abstracter's note: Complete translation]

L.S.

Figure



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S/103/61/022/008/001/015
D274/D302

16.8000 (1121, 1132, 1344)

AUTHOR: Popov, V.M. (Bucharest)

TITLE: On the absolute stability of non-linear automatic control systems

PERIODICAL: Avtomatika i telemekhanika, v. 22, no. 8, 1961,
961-979

TEXT: A new method is described for investigating the absolute stability of non-linear systems of "indirect control". This method differs from Lyapunov's second method. The stability criterion obtained is expressed in terms of the transfer function of the linear part of the system. The differential equations of the system are

$$\frac{dx_1}{dt} = \sum_{k=1}^n a_{1k}x_k + b_1\varphi(\sigma) \quad (1 = 1, 2, \dots, n) \quad (1.1)$$

$$\frac{d\xi}{dt} = \varphi(\sigma), \quad (1.2)$$

$$\sigma = \sum_{l=1}^n c_l x_l - \gamma \xi, \quad (1.3)$$

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On the absolute stability...

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(The functions $\psi_{lm}(t)$ are the fundamental solutions of (1.7)). The transfer function of the linear part of the system is defined:

$$G(j\omega) = N(j\omega) + \frac{Y}{j\omega}. \quad (2.10)$$

The sought-for stability criterion is expressed by the theorem:
If a non-negative number q exists, so that for every real ω the inequality

$$\operatorname{Re}(1 + j\omega q) G(j\omega) \geq 0 \quad (2.11)$$

holds, then the trivial solution of system (1.1)-(1.3) is asymptotically absolutely stable. (Re denotes the real part of a complex quantity). The proof of the theorem proceeds in several steps. The obtained criterion is compared with the absolute-stability criterion obtained by constructing the Lyapunov function of type "quadratic form plus non-linearity integral". A.M. Letov (Ref. 6: Ustoychivost' nelineynykh reguliruyemykh system (Stability of Non-Linear Control Systems) Gostekhizdat, 1951). It is shown that this Lyapunov criterion is included in the criterion just obtained, i.e. if the system has a Lyapunov function of the indicated type, then a non-negative q can be found for which inequality (2.11) holds.

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On the absolute stability...

Various analytical and graphical forms of criterion (2.11) are given.
(2.11) can be rewritten

$$\operatorname{Re}P(j\omega)Q(-j\omega) \geq 0 \quad (5.2)$$

or

$$R(x) \geq 0, x = \omega^2 \quad (5.3)$$

where P, Q, and R are polynomials. Hence (2.11) reduces to the condition that some polynomial in x be non-negative for $x \geq 0$. This problem can be solved by classical methods of algebra. The criterion contains a single arbitrary non-negative parameter q which can be suitably chosen for every particular problem. The optimum values of q can be obtained by simple algebraical methods. It is noted that the criterion for the Lyapunov-type function does not contain an arbitrary parameter. Most of the foregoing results can be extended to more general cases (other types of differential equations for example). The transfer function of the linear part of the system appears in the criterion. This function can be also found (unlike its derivation in the present article) by more direct methods of linear theory. The graphical criteria described can be used even where the only available knowledge of the linear part of the system

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On the absolute stability...

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is its linearity and autonomy, and where its phase-amplitude characteristic is determined experimentally. There are 4 figures and 10 Soviet-bloc references.

SUBMITTED: January 17, 1961

Card 5/5

33763
S/103/62/023/001/001/014
D201/D304

16,8000 (1031,1132,1329)

AUTHOR: Popov, V.M. (Bucharest)

TITLE: A critical case of absolute stability

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 1, 1962, 3-24

TEXT: The author considers the stability of the trivial solution of a certain class of differential equations, describing the behavior of some automatic systems with one non-linear element. These systems are characterized by the fact that when the non-linear element is replaced by a linear one, a system of differential equations with constant coefficients is obtained, the characteristic equation of which has two zero-valued poles. The stability criteria of such a system may be determined by e.g. the second Lyapunov method. The author uses for this purpose a new method, used by him earlier (Ref. 4: Studii si cercetari energ. acad. RPR, no. 1, Anul. IX, 1959); (Ref. 5: Studii si cercetari energ. acad. RPR, no. 4, Anul. IX, 1959), for systems of various types of differential equations with one or several non-linearities. The following differen-

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(D-1)

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A critical case of absolute stability

and

$$\operatorname{Re} i\omega G(i\omega) \geq 0$$

(3.2)

for all real positive ω , then the trivial solution of system (1.1) and (1.2) is stable "in the whole" for all values of $\varphi(\sigma)$ satisfying Condition 2, and condition

$$\lim_{\sigma \rightarrow \infty} \int_0^\sigma \varphi(\sigma) d\sigma = +\infty; \quad (3.3)$$

$$\lim_{\sigma \rightarrow -\infty} \int_0^\sigma \varphi(\sigma) d\sigma = +\infty. \quad (3.4)$$

Appendix I shows that inequality (3.2) is necessary for the existence of a Lyapunov function, in a given system, in the form "quadratic plus the non-linearity integral". Theorem 2: If Condition 1 is satisfied together with inequalities (3.1), (3.2) and

$$\lim_{\omega \rightarrow \infty} \operatorname{Re} i\omega G(i\omega) > 0 \quad (3.5)$$

then the trivial solution of system (1.1)-(1.2) is stable "in the whole" for any function $\varphi(\sigma)$ which satisfies Condition 2 and condi-

A critical case of absolute stability

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tions

$$\limsup_{\sigma \rightarrow \infty} \left(|\varphi(\sigma)| + \int_0^\sigma |\varphi(\sigma)| d\sigma \right) = \infty, \quad (3.6)$$

$$\limsup_{\sigma \rightarrow -\infty} \left(|\varphi(\sigma)| + \int_0^\sigma |\varphi(\sigma)| d\sigma \right) = \infty. \quad (3.7)$$

Theorem 3: If the trivial solution of system (1.1)-(1.2) is stable "in the whole" and if conditions 1 and 2 are satisfied together with (3.1) and

$$\operatorname{Re} i\omega G(i\omega) > 0 \quad (3.8)$$

for all real positive ω , then the trivial system solution is asymptotically stable "in the whole". There are 13 references: 11 Soviet bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: J.D. Massera, Ann. Math. July, 1956.

SUBMITTED: June 5, 1961

Card 4/4

POPOV, V.M.

A new criterion for the stability of systems containing nuclear reactors. Rev electrotechn energet 8 no.1:113-130 '63.

1. Corresponding member of the Academy of the Rumanian People's Republic.

POPOV, V.M. (Bukharest)

Solution of a new problem concerning the reliability of control
systems. Avtom.i telem. 24 no.127-26 Ja '63. (MIRA 16:1)
(Automatic control)

45582

S/103/63/024/002/001/020
D201/D308

AUTHORS:

Popov, V.M. and Khalanay, A. (Bucharest)

TITLE:

A problem of the theory of optimum systems with delay

PERIODICAL:

Avtomatika i telemekhanika, v. 24, no. 2, 1963.
133-135

TEXT:

The authors show that, given a system

$$\dot{x}(t) = A(t)x(t) + B(t)x(t - \tau) + H(t)u(t), \quad x(t) = \Phi(t), \quad t \in [-\tau, 0],$$

and the functional

$$I(u) = \int_{-\tau}^0 \{x^*(t)F(t)x(t) + x^*(t - \tau)G(t)x(t - \tau) + u^*(t)H(t)u(t)\} dt,$$

whose F, G, H are symmetrical matrices greater than or equal to zero,
the optimum control $u(t)$ has the unique solution $u(t) = -H^{-1}(t)M^*$

Card 1/2

POPOV, V.M.

Hyperstability of automatic systems with several nonlinear
elements. Rev electrotechn energet 9 no.1:35-45 '64

1. Corresponding Member of the Rumanian Academy.

L 10720-65 EWT(d)/EWA(m)-2 Po-4/Pq-4/Pg-4/Pk-4/Pl-4 IJP(c)/ASD(a)-5/
AFMDC BC

ACCESSION NR: AP4045339

S/0103/64/025/009/1257/1262 B

AUTHOR: Popov, V. M. (Bucharest)

TITLE: One problem in the theory of absolute stability of control systems

SOURCE: Avtomatika i telemekhanika, v. 25, no. 9, 1964, 1257-1262

TOPIC TAGS: control system, absolute stability, absolute stability criteria, Lyapunov function, absolute stability, frequency criterions

ABSTRACT: Absolute stability of a control plant described by the system of differential equations

$$\frac{dx}{dt} = Ax + b\lambda\sigma \quad (1)$$

$$\sigma = c^T x,$$

where x is an n -dimensional vector, b and c^T are n -dimensional constant vectors, A is an $n \times n$ matrix, and λ is an arbitrary constant, is analyzed. The Lyapunov function quadratic form plus integral of

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"nonlinearity" is constructed, and its derivative is found. It is proven that when system (1), the Lyapunov function, and its derivative satisfy certain conditions, the frequency criteria of absolute stability (the sufficient condition for absolute stability) derived earlier by the author are satisfied. Orig. art. has 51 formulas.

ASSOCIATION: none

SUBMITTED: 29 Dec 63

ATD PRESS: 3115

ENCL: 00

SUB CODE: IE, MA

NO REF Sov: 001

OTHER: 000

Card 2/2

BUKOV, V.M., inzh.; BUDANOVICH, V.O., inzh.

Network of group-type secondary automatic reclosing for
substations with remote control. Elek. sta. of 70,0-27-82
Mr '64. (MIL 17:6)

POPOV, Vyacheslav Menandrovich; KARPOV, S.P., prof., red.
MORDOVINA, L.G., tekhn. red.

[Ixodid ticks of Western Siberia; taxonomy, characteristics, ecology and geographical distribution of individual species, epidemiological and epizootiological role, control of ixodid ticks] Iksodovye kleshchi Zapadnoi Sibiri; sistematika, kharakteristika, ekologija i geograficheskoe rasprostranenie otdel'nykh vidov, epidemiologicheskoe i epizootologicheskoe znachenie, bor'ba s iksodovymi kleshchami. Tomsk, Izd-vo Tomskogo univ., 1962. 257 p. (MIRA 17:3)

1. Chlen-korrespondent AMN SSSR (for Karpov).

POPOV, V.M.

Use of continuous drainage with an active suction system for
draining urine from the bladder. Urologiia. no.5:59-60 '64.
(MIRA 12:8)
1. Khirurgicheskoye otdeleniye Gor'kovskoy dorezhnay bol'niyat
(nachal'nik G.A. Makhov; nauchnyy rukovoditel' - dotsent B.P.
Metal'nikov).

TARNOVSKIY, I.Ya.; POZDEYEV, A.A.; ODINOKOV, Yu.I.; POPOV, V.M.

Investigating the flow rate area of a metal during rolling on
large cogging mills. Izv. vys. ucheb. zav.; chern. met. 6
(MIRA 16:9)
no.7:96-105 '63.

1. Ural'skiy politekhnicheskiy institut.
(Rolling (Metalwork)) (Deformations (Mechanics))

TARNOVSKIY, I.Ya.; POZDEYEV, A.A.; ODINOKOV, Yu.I.; POPOV, V.M.;
CHICHIGIN, V.A.

Increase in metal width and the corresponding speeds of horizontal and vertical rolls on universal blooming mills. Izv. vys. ucheb. zav.; chern. met. 6 no.9:103-109 '63. (MIRA 16:11)

1. Ural'skiy politekhnicheskiy institut.

MOSKALEV, A.N., actsent; FILATOV, N.V., dotsent; POKOV, V.M., inzh.; FEDIN, I.A.,
inzh.

Efficiency of jet + cones in the jet piercing of rock. Iz.vys.mash.
zav.;gaz.rbur. / n.9:68-72 '64. (MIRA 18:1)

I. Sibirskiy metallurgicheskiy institut imeni S. Ordzhonikidze. Re-
komendovana kafedroy gornykh mashin i rudnichnogo transporta.

L 57831-65EWP(k)/EWA(c)/EWT(m)/EWP(b)/T/EWP(r)/EWP(t) Pf-4 JD/HM
ACCESSION NR: AP5012645UR/0135/65/000/005/0034/0034
621.791.94.03

25

23

B

AUTHOR: Moskalev, A. N. (Candidate of technical sciences); Filatov, N. V. (Candidate of technical sciences); Popov, V. M. (Engineer); Fedin, I. A. (Engineer)

TITLE: Burning openings in 200-400 mm thick metal with a rocket-type torch

SOURCE: Svarochnoye proizvodstvo, no. 5, 1965, 34

TOPIC TAGS: flame cutting, cutting torch, cast iron torch cutting

ABSTRACT: Results are given of tests on burning openings in metal (cast iron shafts, molds, etc) with thicknesses of 200 to 400 mm with a kerosene-oxygen flame. The construction and operation of the rocket-type torch and cutting technology are described. Openings with a diameter of 55-60 mm are burned at a rate of 7-10 m/hr. Oxygen consumption is 25 to 50% less than in oxygen torch cutting. Openings can be burned in shafts with a diameter of 300-400 mm and in cast iron molds with thicknesses of 200-400 mm with the torch maintained in one position. Orig. art. has: 1 figure, 1 table.

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ACCESSION NR: AP5012645

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ASSOCIATION: Filial instituta mekhaniki AN UkrSSR (Affiliate of the Institute of Mechanics UkrSSR); Sibirskiy metallurgicheskiy institut (Siberian Metallurgical Institute)

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ENCL: 00

SUB CODE: MM

NO REF Sov: 001

OTHER: 000

App
Card 2/2

POPOV, V.M., inzh.

Phase by phase replacement of defective suspension insulators on
35 to 110 kv. power transmission lines under partial phase
operation. Elek. sta. 34 no.10:67-70 0 '63. (MIRA 16:12)

POPOV, V.M., inzh.; FAYVUSH, M.Ya.

Overall mechanization of the fuel transport department of a thermal
electric power plant. Elek. stat. 35 no.1:84-85 Ja '64.
(MIRA 17:6)